A GRAPHIC REPRESENTATION OF THE REPORT SPECIFIED IN THE TITLE.

The following memorandum was prepared in connection with the development of water power at Calgary, but the same principle applies to any other point on the Eastern Slope of the Rocky Mountains. It is self-explanatory - showing the necessity of the storage of water whether it is required for irrigation, to prevent disaster from floods or for power. There is no reason why any water so stored should not be used for power purposes, so long as its value for the main purpose for which it was stored is not injured thereby.

The attached blue print shows the discharge of the Bow River and the Elbow River, each separately and also combined. To obtain the second feet multiply the figures given by 10.53. Why 10.53 came to be adopted was this. The lowest average monthly discharge for the eleven years for the Bow River averaged 1053 second feet. It was thought that would be a suitable unit on which to base comparison of the discharges. Probably it would have been as well to have taken 1000, however, it does not matter what is taken, because the graph demonstrates merely by comparison.

Table number one in the Graph gives the Bow River, number two the Elbow River, and three the Bow and Elbow combined. It will be noted that the discharge for the year worked out on a monthly average is 355.1 for the Bow and 38.5 for the Elbow, the two combined being 393.6. If there was storage enough so that this amount of water could be discharged uniformly all the year round, the Bow and Elbow combined would make a very valuable stream for power purposes, and it is submitted that it will not prove expensive or injurious to any interest to provide the storage necessary to approach very closely the "possible".

The lowest average monthly discharge for the eleven years on the Bow is for February, 1053 second feet and for the Elbow January, 113 second feet, the two combined making 1166 second feet. However in looking through the details for the Bow and Elbow it will be found that the following are the extremely low discharges:-

Year	Month	Lowest monthly Discharge for Bow River.	Lowest Monthly Discharge for Elbow River.	Both Rivers Combined.
1911	Dec.	774 sec. ft.	119 sec. ft.	883 sec. ft.
1911	Jan.	1109 "	62 "	1171 "
1920	Mar.	809 "	116 "	925 "
1920	Jan.	831 "	115 "	946 "
1919	Mar.	873 "	112 "	985 "
1920	Feb.	893 "	113 "	1006 "
1917	Mar.	908 "	176 "	1084 "

The power that could be developed would be 4.7 times the amount that is possible without such storage.

$$\frac{(393.6 \times 10.53 \times 10)}{11} = 3768$$ the number of horse power with a ten foot head, that would be developed if sufficient storage was provided. This is based on an 80% efficiency. For each 1% of increase in efficiency there would be 1¼% in power development. The foregoing is equivalent to 376 H.P. for each one foot in head. It can thus be readily worked out for any height in head and for percentage of efficiency above 80%.

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